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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,511	03/08/2004	Abraham Fisher	180/03861	1927

70978 7590 01/31/2008

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EXAMINER	
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ART UNIT	PAPER NUMBER
2616	

MAIL DATE	DELIVERY MODE
01/31/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/796,511	FISHER ET AL.	
	Examiner	Art Unit	
	Wei-po Kao	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *19 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26 and 31-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *4,6-9 and 33* is/are allowed.

6)☒ Claim(s) *1-3,5,10-22,24-26,31,32 and 34* is/are rejected.

7)☒ Claim(s) *23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/ are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Respond to Arguments

1. Applicant's arguments with respect to claim 1-26 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejection - 35 USC § 103

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3, 10, 13 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witchey, U.S. Patent No 5563885 in view of Acharya et al, U.S. Patent No 6502062.

Regarding Claim 1, Witchey discloses that **a method of scheduling the handling of communication channels by a processor assigned to handle a plurality of channels** (see

Abstract Line 1-4), **comprising: determining for each channel of a plurality of assigned channels of the processor, handled by the processor, a target time by which time it should receive processing** (see Abstract Line 4-14); **selecting one or more of the assigned channels whose data is to be handled next, based on the target times of the channels** (see Figure 5A-B, Column 8 Line 43-67). However, Witchey does not disclose that **the method, wherein when more than one channel is selected, choosing for handling before other channels, at least one of the selected channels based on a consideration directed at minimizing the average processing time of the channels; wherein choosing at least one of the selected channels comprises choosing at least one channel of a same type as a channel currently by the processor.** Acharya et al from the same field of endeavor disclose that **the method, wherein when more than one channel is selected, choosing for handling before other channels, at least one of the selected channels based on a consideration directed at minimizing the average processing time of the channels** (see Abstract Line 1-11, Figure 1, Column 3 Line 11-20); **wherein choosing at least one of the selected channels comprises choosing at least one channel of a same type as a channel currently by the processor** (see Figure 1 Element 42 i.e. all the channels are the same type, namely data channels, thus regardless which channel is chosen and how, they are the same type). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the minimum flow algorithm from Acharya to Witchey's scheduling system. The rationale would have been that by doing so, data flow among multiple channels can be less restricted and further lower the system buffering requirements.

Regarding Claim 3, Acharya et al further disclose that **the method comprising: determining an average duration of the handling of the channel** (see Column 3 Line 11-20). At the time of the invention, it would have been obvious to a person ordinary skill in the art to determine an average duration of the handling of the channel. The rationale would have been that extra information regarding the channels can help the scheduling processor further improve the performance.

Regarding Claim 10, Acharya et al further disclose that **the method, wherein when more than one channel is selected, choosing for handling before other channels, at least one of the selected channels based on a consideration directed at minimizing the average processing time of the channels** (see Abstract Line 1-11, Figure 1, Column 3 Line 11-20). At the time of the invention, it would have been obvious to a person ordinary skill in the art to choose for handling before other channels, at least one of the selected channels based on a consideration directed at minimizing the average processing time of the channels. The rationale would have been that the system can perform more efficiently with faster speed.

Regarding Claim 13, Witchey further discloses that **the method comprising: selecting a plurality of channels having different target times** (see Figure 5A-B, Column 8 Line 43-67).

Regarding Claim 14, Acharya et al further disclose that **the method comprising: choosing based on the protocol governing the handling of the data of the channels** (see Column 3 Line

11-34). At the time of the invention, it would have been obvious to a person ordinary skill in the art to choose channels based on the protocol governing the handling of the data of the channels. The rationale would have been that the system can perform more efficiently with extra rule governing data traffic.

Regarding Claim 34, Witchey discloses that **a method of scheduling the handling of communication channels by a processor assigned to handle a plurality of channels** (see Abstract Line 1-4, Column 2 Line 50-55) **comprising: determining for each channel, handled by the processor, a target time by which time it should receive processing** (see Abstract Line 4-14, Column 2 Line 56-63); **selecting, based on the target times of the channels, a plurality of assigned channels, having two or more different target times, from which a next handled channel is to be selected** (see Figure 5A-B, Column 8 Line 43-67); **choosing for processing one of the selected channels at least partially based on considerations not related to the target times of the channels; and scheduling the processor to handle the chosen channel** (see Column 9 Line 3-12). However, Witchey does not disclose that **the method, wherein choosing at least one of the selected channels comprises choosing at least one channel of a same type as a channel currently by the processor.** Acharya et al from the same field of endeavor disclose that **wherein choosing at least one of the selected channels comprises choosing at least one channel of a same type as a channel currently by the processor** (see Figure 1 Element 42 i.e. all the channels are the same type, namely data channels, thus regardless which channel is chosen and how, they are the same type). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the minimum flow algorithm

from Acharya to Witchey's scheduling system. The rationale would have been that by doing so, data flow among multiple channels can be less restricted and further lower the system buffering requirements.

6. Claims 2, 5, 11, 12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witchey, U.S. Patent No 5563885 and Acharya et al, U.S. Patent No 6502062 as applied to claim 1 above, and further in view of Netzer et al U.S. Publication No 20030014484.

Regarding Claim 2, Witchey and Acharya et al disclose all the limitations in claim 1 except that **the method, wherein determining a target time for each channel comprises determining a time by which the channel needs to receive a handling session in order to avoid starvation.** Netzer et al from the same field of endeavor teach that **the method, wherein determining a target time for each channel comprises determining a time by which the channel needs to receive a handling session in order to avoid starvation** (see Paragraph [0037]). At the time of the invention, it would have been obvious to a person ordinary skill in the art to determine a target time by which the channel needs to receive a handling session in order to avoid starvation. The rationale would have been that the system can perform more efficiently without lack of resource.

Regarding Claim 5, Witchey and Acharya et al disclose all the limitations in claim 1 except that **the method, wherein selecting based on the target times comprises selecting the channels**

having a shortest duration until their target times. Netzer et al from the same field of endeavor teach that **the method, wherein selecting based on the target times comprises selecting the channels having a shortest duration until their target times** (see Paragraph [0037]). At the time of the invention, it would have been obvious to a person ordinary skill in the art to select channels having a shortest duration until their target time. The rationale would have been that the system can perform more efficiently with faster speed.

Regarding Claim 11, Witchey and Acharya et al disclose all the limitations in claim 1 except that **the method comprising: choosing from the selected channels that have an equal quality of service rating.** Netzer et al from the same field of endeavor teach that **the method comprising: choosing from the selected channels that have an equal quality of service rating** (see Paragraph [0092]). At the time of the invention, it would have been obvious to a person ordinary skill in the art to select channels having an equal quality of service rating. The rationale would have been that the system can perform more efficiently with more quality ensurance.

Regarding Claim 12, Witchey and Acharya et al disclose all the limitations in claim 1 except that **the method comprising: choosing for handling all the selected channels before handling other channels.** Netzer et al from the same field of endeavor teach that **the method comprising: choosing for handling all the selected channels before handling other channels** (see Paragraph [0016] [0093] [0099] e.g. all the selected channels has unlimited processing session, a channel is selected to have limited procession session is processed in the next cycle

after all the selected channels have been handled). At the time of the invention, it would have been obvious to a person ordinary skill in the art to choose for handling all the selected channels before handling other channels. The rationale would have been that the system can perform more efficiently with priority control.

Regarding Claim 17, Witchey and Acharya et al disclose all the limitations in claim 1 except that **the method/apparatus comprising: choosing based on a consideration that minimizes time spent on memory transfers.** Netzer et al from the same field of endeavor teach that **the method/apparatus comprising: choosing based on a consideration that minimizes time spent on memory transfers** (see Paragraph [0062-63]). At the time of the invention, it would have been obvious to a person ordinary skill in the art to choose channels based on a consideration that minimizes time spent on memory transfers. The rationale would have been that the system can perform more efficiently with faster speed.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable Witchey, U.S. Patent No 5563885 and Acharya et al, U.S. Patent No 6502062 as applied to claim 1 above, and further in view of Chin et al U.S. Patent No 6490298.

Regarding Claim 15, Witchey and Acharya et al disclose all the limitations in claim 1 except that **the method comprising choosing based on the transmission rates of the channels.** Chin et al from the same field of endeavor disclose that **the method comprising choosing based on the**

transmission rates of the channels (see Abstract, Column 1 Line 57-59). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of assigning incoming sources/channels to a scheduler according to the transmission rate of each source/channel from Chin et al to the scheduling system and method of Withcey. The rationale would have been that it is desired for a scheduling system and method to be flexible in order to handle the multiple source/channels when they change their bit rate frequently and on-the-fly.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable Witchey, U.S. Patent No 5563885 and Acharya et al, U.S. Patent No 6502062 as applied to claim 1 above, and further in view of Cheng et al U.S. Publication No 20050043045.

Regarding Claim 16, Witchey and Acharya et al disclose all the limitations in claim 1 except that **the method comprising choosing based on the types of the channels.** Cheng et al from the same field of endeavor disclose that **the method comprising choosing based on the types of the channels** (see Abstract, Paragraph [0027]). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the functionality of effecting time controlled time scheduling from Cheng et al to the scheduling system and method of Withcey. The rationale would have been that it is desired to schedule the channels of the same type in order to reduce the amount of interference between channels when they have the same target time.

9. Claims 18, 19, 20, 26 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witchey, U.S. Patent No 5563885.

Regarding Claim 18, Witchey discloses that **a method of scheduling the handling of communication channels by a processor assigned to handle a plurality of channels** (see Abstract Line 1-4, Column 2 Line 50-55) **comprising: determining for each channel, handled by the processor, a target time by which time it should receive processing** (see Abstract Line 4-14, Column 2 Line 56-63); **selecting, based on the target times of the channels, a plurality of assigned channels, having two or more different target times, from which a next handled channel is to be selected** (see Figure 5A-B, Column 8 Line 43-67); **choosing for processing one of the selected channels at least partially based on considerations not related to the target times of the channels; and scheduling the processor to handle the chosen channel** (see Column 9 Line 3-12). However, Witchey does not specifically disclose that **the method, wherein choosing one of the selected channels comprises choosing a channel having a farther target time than at least one channel that was not chosen.** Since Witchey discloses that a channel is selected from two or more channels with different target times, a selected channel must have a target time that is either farther or closer than at least one channel that was not selected i.e. consider the exemplary scenario: two channels, A and B, each has the target time of 5 and 10 respectively. At the time of the invention, it would have been obvious to a person ordinary skill in the art to realize that if one of a plurality of channels, which have two ore more different target time, is chosen the selected channel must have a target time that is either farther or closer than at least one channel that was not selected. The rationale would have been that

extra information regarding the channels can help the scheduling processor further improve the performance.

Regarding Claim 19, Witchey discloses all the limitations in claim 31 except that **the method wherein choosing one of the selected channels comprises choosing a channel having a farther target time than at least one channel that was not chosen.** However, since Witchey discloses that a channel is selected from two or more channels with different target times, a selected channel must have a target time that is either farther or closer than at least one channel that was not selected i.e. consider the exemplary scenario: two channels, A and B, each has the target time of 5 and 10 respectively. At the time of the invention, it would have been obvious to a person ordinary skill in the art to realize that if one of a plurality of channels, which have two ore more different target time, is chosen the selected channel must have a target time that is either farther or closer than at least one channel that was not selected. The rationale would have been that extra information regarding the channels can help the scheduling processor further improve the performance.

Regarding Claim 20, Witchey discloses all the limitations in claim 18 except that **the method wherein choosing one of the selected channels comprises choosing a channel having a farther target time than at least one channel that was not chosen.** However, since Witchey discloses that a channel is selected from two or more channels with different target times, a selected channel must have a target time that is either farther or closer than at least one channel that was not selected i.e. consider the exemplary scenario: two channels, A and B, each has the

target time of 5 and 10 respectively. At the time of the invention, it would have been obvious to a person ordinary skill in the art to realize that if one of a plurality of channels, which have two ore more different target time, is chosen the selected channel must have a target time that is either farther or closer than at least one channel that was not selected. The rationale would have been that extra information regarding the channels can help the scheduling processor further improve the performance.

Regarding Claim 26, Witchey further discloses that **the method comprising: choosing a plurality of channels based on considerations not related to timing issues and choosing therefrom a single channel based on the target times** (see Column 9 Line 3-12).

Regarding Claim 31, Witchey discloses that **a method of scheduling the handling of communication channels by a processor assigned to handle a plurality of channels** (see Abstract Line 1-4, Column 2 Line 50-55) **comprising: determining for each channel, handled by the processor, a target time by which time it should receive processing** (see Abstract Line 4-14, Column 2 Line 56-63); **selecting, based on the target times of the channels, a plurality of assigned channels, having two or more different target times, from which a next handled channel is to be selected** (see Figure 5A-B, Column 8 Line 43-67); **choosing for processing one of the selected channels at least partially based on considerations not related to the target times of the channels; and scheduling the processor to handle the chosen channel** (see Column 9 Line 3-12). However, Witchey does not specifically disclose that **the method, wherein choosing one of the selected channels comprises choosing a channel having a closer**

target time than at least one channel that was not chosen. Since Witchey discloses that a channel is selected from two or more channels with different target times, a selected channel must have a target time that is either farther or closer than at least one channel that was not selected i.e. consider the exemplary scenario: two channels, A and B, each has the target time of 5 and 10 respectively. At the time of the invention, it would have been obvious to a person ordinary skill in the art to realize that if one of a plurality of channels, which have two ore more different target time, is chosen the selected channel must have a target time that is either farther or closer than at least one channel that was not selected. The rationale would have been that extra information regarding the channels can help the scheduling processor further improve the performance.

9. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witchey, U.S. Patent No 5563885 as applied to claim 18 above, and further in view of Netzer et al U.S. Publication No 20030014484.

Regarding Claim 21, Witchey discloses all the limitations in claim 18 except that **the method comprising: selecting based on processing efficiency considerations.** Netzer et al from the same field of endeavor disclose that **the method comprising: selecting based on processing efficiency considerations** (see Paragraph [0075] [0078]). At the time of the invention, it would have been obvious to a person ordinary skill in the art to choose channels based on processing efficiency considerations. The rationale would have been that the system can perform more efficiently with faster speed.

Regarding Claim 22, Witchey discloses all the limitations in claim 18 except that **the method comprising: determining a time by which the channel needs to receive a handling session in order to avoid starvation.** Netzer et al from the same field of endeavor teach that **the method, wherein determining a target time for each channel comprises determining a time by which the channel needs to receive a handling session in order to avoid starvation** (see Paragraph [0037]). At the time of the invention, it would have been obvious to a person ordinary skill in the art to determine a target time by which the channel needs to receive a handling session in order to avoid starvation. The rationale would have been that the system can perform more efficiently without lack of resource.

10. Claims 24 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witchey, U.S. Patent No 5563885 as applied to claims 18 and 31 above, and further in view of Dennis U.S. Patent No 6195699.

Regarding Claim 24, Witchey discloses all the limitations in claim 18 except that **the method comprising: choosing a channel that requires processing by a software module already in a memory of the processor.** Dennis from the same field of endeavor discloses that **the method comprising: choosing at least one channel that requires processing by a software module already in a memory of the processor** (see Column 3 Line 42-47, Column 4 Line 40-44, Column 8 Line 24-41). At the time of the invention, it would have been obvious to a person

ordinary skill in the art to implement the real time scheduling scheme from Dennis to the scheduling system and method of Withcey. The rationale would have been that the real time scheduling schemes reduce the scheduling table storing in the processor and further lower the system buffering requirements.

Regarding Claim 32, Witchey discloses all the limitations in claim 31 except that **the method comprising: choosing a channel that requires processing by a software module already in a memory of the processor.** Dennis from the same field of endeavor discloses that **the method comprising: choosing at least one channel that requires processing by a software module already in a memory of the processor** (see Column 3 Line 42-47, Column 4 Line 40-44, Column 8 Line 24-41). At the time of the invention, it would have been obvious to a person ordinary skill in the art to implement the real time scheduling scheme from Dennis to the scheduling system and method of Withcey. The rationale would have been that the real time scheduling schemes reduce the scheduling table storing in the processor and further lower the system buffering requirements.

11. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Witchey, U.S. Patent No 5563885 as applied to claim 18 above, and further in view of Acharya et al, U.S. Patent No 6502062.

Regarding Claim 25, Witchey discloses all the limitations in claim 18 except that **the method, wherein choosing at least one of the selected channels comprises choosing at least one**

channel of a same type as a channel currently by the processor. Acharya et al from the same field of endeavor disclose that **the method, wherein choosing at least one of the selected channels comprises choosing at least one channel of a same type as a channel currently by the processor** (see Figure 1 Element 42 i.e. all the channels are the same type, namely data channels, thus regardless which channel is chosen and how, they are the same type). At the time of the invention, it would have been obvious to a person ordinary skill in the art to choose at least one of the selected channels comprises choosing at least one channel of a same type as a channel currently by the processor. The rationale would have been that the system can perform more efficiently with less system resource wasted.

Allowable Subject Matter

12. Claim 2 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter:

For claims 4, 6-9, 23 and 33 prior art fails to show alone or in combination that the specific limitations of assigning channels accordingly to be scheduled by the scheduling processor.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Referring to the PTO Form 892, references are cited to show similar scheduling system and method to handle multiple channels or source.

15. Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wei-po Kao whose telephone number is (571)270-3128. The examiner can normally be reached on Monday through Friday, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571)272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

W.K

RICKY Q. NGO
SUPERVISORY PATENT EXAMINER